



Standard Practice for Determination of Volatile Organic Compounds (Excluding Formaldehyde) Emissions from Wood-Based Panels Using Small Environmental Chambers Under Defined Test Conditions¹

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1. Scope

1.1 The practice measures the volatile organic compounds (VOC), excluding formaldehyde, emitted from manufactured wood-based panels. A pre-screening analysis is used to identify the VOCs emitted from the panel. Emission factors (that is, emission rates per unit surface area) for the VOCs of interest are then determined by measuring the concentrations in a small environmental test chamber containing a specimen. The test chamber is ventilated at a constant air change rate under the standard environmental conditions. For formaldehyde determination, see Test Method D 6007.

1.2 This practice describes a test method that is specific to the measurement of VOC emissions from newly manufactured individual wood-based panels, such as particleboard, plywood, and oriented strand board (OSB), for the purpose of comparing the emission characteristics of different products under the standard test condition. For general guidance on conducting small environmental chamber tests, see Guide D 5116.

1.3 VOC concentrations in the environmental test chamber are determined by adsorption on an appropriate single adsorbent tube or multi-adsorbent tube, followed by thermal desorption and combined gas chromatograph/mass spectrometry (GC/MS) or gas chromatograph/flame ionization detection (GC/FID). The air sampling procedure and the analytical method recommended in this practice are generally valid for the identification and quantification of VOCs with saturation vapor pressure between 500 and 0.01 kPa at 25°C, depending on the selection of adsorbent(s).

NOTE 1—VOCs being captured by an adsorbent tube depend on the adsorbent(s) and sampling procedure selected (see Practice D 6196). The user should have a thorough understanding of the limitations of each adsorbent used.

1.4 The emission factors determined using the above procedure describe the emission characteristics of the specimen

under the standard test condition. These data can be used directly to compare the emission characteristics of different products and to estimate the emission rates up to one month after the production. They shall not be used to predict the emission rates over longer periods of time (that is, more than one month) or under different environmental conditions.

1.5 Emission data from chamber tests can be used for predicting the impact of wood-based panels on the VOC concentrations in buildings by using an appropriate indoor air quality model, which is beyond the scope of this practice.

1.6 The values stated in SI units shall be regarded as the standard (see IEEE/ASTM SI-10).

1.7 *This practice does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of the standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specified hazard statements see Section 6.

2. Referenced Documents

2.1 ASTM Standards:²

- D 1356 Terminology Relating to Sampling and Analysis of Atmospheres
- D 1914 Practice for Conversion Units and Factors Relating to Sampling and Analysis of Atmospheres
- D 5116 Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products
- D 6007 Test Method for Determining Formaldehyde Concentrations in Air from Wood Products Using a Small Scale Chamber
- D 6196 Practice for Selection of Sorbents, Sampling, and Thermal Desorption Analysis Procedures for Volatile Organic Compounds in Air
- E 355 Practice for Gas Chromatography Terms and Relationships

¹ This practice is under the jurisdiction of ASTM Committee D22 on Sampling and Analysis of Atmospheres and is the direct responsibility of Subcommittee D22.05 on Indoor Air.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

